

WHAT IS CLAIMED IS:

1. A magnetoresistive film in which at least a first magnetic layer, a second magnetic layer, a nonmagnetic layer, a third magnetic layer, and a fourth magnetic layer are stacked in the order named,

5 wherein at least said first magnetic layer comprises Gd and said fourth magnetic layer comprises Tb and/or Dy,

10 wherein each of said first magnetic layer and fourth magnetic layer has an easy axis of magnetization along a perpendicular direction to a film plane, and the second magnetic layer and the third magnetic layer have a greater spin polarization than the first magnetic layer and the fourth magnetic layer, and

15 wherein said second and third magnetic layers are magnetic layers comprising at least Co and Co contents thereof are not less than 20 at.% nor more than 90 at.%.

20 2. The magnetoresistive film according to Claim 1, wherein the Co contents of said second and third magnetic layers are not less than 30 at.% nor more than 50 at.%.

25 3. The magnetoresistive film according to Claim 1, wherein said first magnetic layer and second magnetic layer are exchange-coupled with each other and

5 said third magnetic layer and said fourth magnetic
layer are exchange-coupled with each other, and wherein
magnetization of the second magnetic layer and
magnetization of the third magnetic layer are oriented
in the perpendicular direction by exchange coupling
force from the first magnetic layer and from the fourth
magnetic layer.

10 4. The magnetoresistive film according to Claim
1, wherein thicknesses of said second magnetic layer
and third magnetic layer are not less than 0.2 nm.

15 5. The magnetoresistive film according to Claim
4, wherein the thicknesses of said second magnetic
layer and third magnetic layer are not less than 0.5 nm
nor more than 1.5 nm.

20 6. The magnetoresistive film according to Claim
1, wherein said first magnetic layer and said fourth
magnetic layer are alloy films of rare earth metal and
transition metal.

25 7. The magnetoresistive film according to Claim
1, wherein said nonmagnetic layer is comprised of an
insulating film.

8. The magnetoresistive film according to Claim

7, wherein said nonmagnetic layer is comprised of an oxide.

9. The magnetoresistive film according to Claim
5 1, wherein said second and third magnetic layers comprise Fe.

10. A magnetic memory comprising:

a substrate;

10 a magnetoresistive film formed on the substrate, which comprises a first magnetic film, a second magnetic film, a nonmagnetic layer, a third magnetic film, and a fourth magnetic film, wherein said second magnetic film and third magnetic film comprise at least 15 Co and a magnetoresistance ratio of said magnetoresistive film is not less than 10%;

a write line for reversing magnetization in the magnetic films of the magnetoresistive film; and

20 a bit line provided on the opposite side to said substrate with respect to the magnetoresistive film.

11. The magnetic memory according to Claim 10, wherein contents of said Co are not less than 20 at.% nor more than 90 at.%.